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## A NEW VARIETY OF ABIES BALSAMEA.

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Early in August, 1907, while botanizing in eastern Quebec, the writer became much interested in two varieties of the Balsam Fir, *Abies balsamea,* which differed so strikingly in their cones as to attract his instant attention. On the slopes of Mt. Ste. Anne and Percé Mt., near the tip of the Gaspé Peninsula, the two trees are both abundant and they were there first noticed in looking from a high level across the tops of the Firs. In attempting to distinguish in the landscape the spire-like tops of the White Spruce (*Picea canadensis*) the Black Spruce (*Picea mariana*), and the Fir (*Abies balsamea*), Professor J. F. Collins and the writer were puzzled by the unusual appearance of many of the trees. Though obviously Firs their summits at that season had a peculiar whitish misty appearance which distinguished them in the forest from the ordinary *Abies balsamea* as figured, for example, in Sargent's Silva (xii. t. 610). Upon felling one of the trees the source of the unusual whitish appearance (quite different from that produced by pitch) was revealed, for in all the cones the thin widespreading awns and sometimes the broad erose and emarginate tips of the bracts were still exserted beyond the thick dark scales. In the ordinary *A. balsamea* the pale membranous bracts, during the flowering season, are much longer than the firmer dark scales, but the latter quickly develop and by July much exceed their subtending bracts and those above. This was the condition in the trees upon Percé Mt. which we had picked out, without question, as the familiar *A. balsamea.* During the remaining two weeks of our stay at Percé the Firs were closely watched and it was found that the two trees were readily distinguished near at hand (and, by the aid of a glass, in the distance).

Many attempts to correlate slight differences of foliage with the peculiarity of the cones showed that both trees had the same trivial variations in the needles and that only in the comparative length of the scale and its subtending bract were the trees separable.

The cones secured at Percé were not mature and it was felt that, although the two trees were growing side by side and under conditions which indicated the same state of development, there still remained the slight possibility that, as the season advanced, the cone-scales would further elongate and obscure the difference which was so conspicuous in mid-summer. The material was consequently pigeonholed until further observations could be made. During the past summer, therefore, while spending some weeks with Professor K. M. Wiegand in eastern Washington County, Maine, the writer was pleased to find the same two variations of the Fir. There, however, the trees, though ordinarily distinct, showed more intergradation in the length of their bracts than was observed at Percé, indicating that they were to be considered varieties of one species rather than specifically distinct. Again the cones when observed were not fully mature, but this difficulty has been happily overcome, for through the kindness of Miss Mary Deane Dexter the writer has received the top of a fruiting tree collected at Winter Harbor, Hancock County, Maine, on September 25th. This material sent by Miss Dexter is fully mature and the cone-scales are rapidly falling. All but the uppermost scales are equalled or exceeded by the divergent awn of the subtending bract so that the awns appear wide-spreading and stand out 1 to 5 millimeters from the cone. This prominence of the awn is due not so much to the fact that it equals or exceeds the subtended scale as to the failure of the scale next below to cover it. Material from another station has also come to hand. This is a fruiting sprig with disintegrating cones sent from Monhegan Island on September 6, by Mrs. Edwin C. Jenney to Edward L. Rand, Esquire, as "a Fir which puzzles us because of the bristles on the cones." Mrs. Jenney writes further: "The tree had evidently been blown over some years back and was growing in a horizontal position. In spite of this fact it is a large and healthy-looking tree. We wondered very much about the cones, never having noticed any with the extended awns before."

In searching the literature of the subject the writer finds that *Abies balsamea* is sometimes described as having the bracts "shorter than the scales or rarely longer," but his own experience in the field and these recent observations by others lead him to the conviction that the tree in which the awns of the bracts are so obvious in fully grown cones should be separated varietally from the ordinary form of the species. Comparison of the scales of disintegrated mature cones shows that in the typical *A. balsamea* the bract (including the erect awn) is ordinarily about two thirds as long as the lamina of its subtended scale, though varying from three sevenths to five sixths as long; while in the variety with divergent exserted awns the bract is ordinarily as long as, and occasionally a little longer than its subtended scale; and that in general the variety has slightly smaller cones than the typical form of the species.[1] On account of these characteristics of the cones the tree is here proposed as

ABIES BALSAMEA (L.) Mill., var. **phanerolepis**, n. var., strobilis subcylindraceis; laminis ovuliferis maturis suborbicularibus vel reniformibus 8–13 mm. longis; laminis membranaceis 8–13 mm. longis, cuspide patenti exserta.

Strobils subcylindric: mature laminas of the ovuliferous scales suborbicular or reniform, 8–13 mm. long; of the membranaceous bracts 8–13 mm. long, with a spreading exserted awn: otherwise as in the typical form of the species.— QUEBEC, slopes of Percé Mt., Percé, Gaspé County, August 3, 1907 (*Fernald & Collins*, no. 860): NEWFOUNDLAND, cool damp soil, Channel, July 27–August 1, 1901; damp woods, near Topsail, Conception Bay, August 12–19, 1901 (*Howe & Lang*, nos. 975, 1303): MAINE, Pembroke, July 23, 1909 (*Fernald*); Grindstone Neck, Winter Harbor, September 25, 1909 (*Miss Mary Deane Dexter*) Monhegan Island, September 6, 1909 (*Mrs. Edwin C. Jenney*).

This may well be the variation of *Abies balsamea* which has given rise to the report at various times of *A. Fraseri* from New England. In that southern species, however, the cones are more ovoid and the bracts are very much longer than the scales and have strongly recurved broad tips. In Loudon's Encyclopedia of Trees and Shrubs there is a fairly characteristic figure (fig. 1953) of the cone of var. *phanerolepis*, indicated as an illustration of *Picea balsamea*.

GRAY HERBARIUM.

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[1] Measurements of mature scales of *A. balsamea*, taken at random from many cones, show the laminas of the scales to range from 11 to 15 mm. in length, with a mean of 12.8 mm.; and the laminas of the bracts (including the awn) to range from 6 to 10 mm. in length, with a mean of 8.5. Similar measurements of the scales of the variety show the laminas to vary from 8 to 13 mm. in length, with a mean of 11 mm.; and the laminas of the bracts to be of essentially the same length.